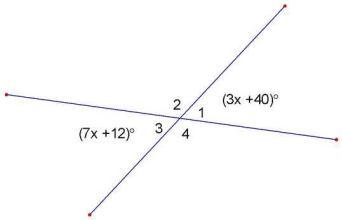
Warm-up!

$\angle 1$ and $\angle 2$ are _____ and $\angle 1$ and $\angle 4$ are _____.

Find $m\angle 1$, $m\angle 2$, $m\angle 3$, and $m\angle 4$.



2.1 Use Inductive Reasoning

Conjecture-unproven statement that is based on observations

Inductive reasoning-reasoning using a # of examples to make a prediction

Patterns:

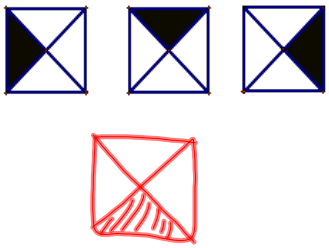
Ex 1: 1, 3, 6, 10, 15, 21

Ex 2: A, B, B, C, C, C, D, D, D, D, E E E E E

Ex 3: 1 x 9 + 2 = 11
12 x 9 + 3 = 111
123 x 9 + 4 = 1111
1234x9+5 = 11111

Ex 4: 3, 5, 7, 9

Ex 5:

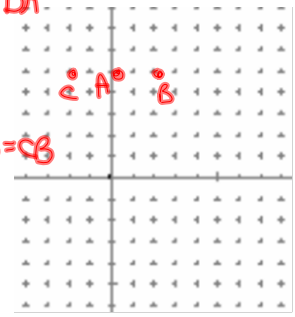


Make a conjecture based on the given information.
Ex 6: ABCD is a square

$AB = BC = CD = DA$

$\overline{AB} \cong \overline{BC} \cong \overline{DC} \cong \overline{DA}$

Ex 7: A(0,5) B(2, 5) C(-2, 5)



A, B, & C are collinear

$CA = AB$ $CA + AB = CB$

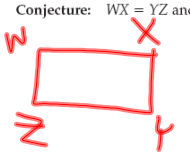
A, B, & C are coplanar

Counterexample-one false example that shows a conjecture is not true

Determine whether each conjecture is *true* or *false*. Give a counterexample for any false conjecture.

8. **Given:** x is an integer.
Conjecture: $-x$ is negative. F, $x = -2$

9. **Given:** $WXYZ$ is a rectangle.
Conjecture: $WX = YZ$ and $WZ = XY$ T

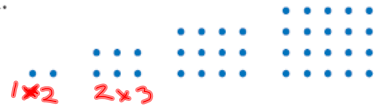


Make a conjecture about the next item in each sequence.

4. 

5. $-8, -5, -2, 1, 4$

Make a conjecture about the next item in each sequence.

11. 

13. $1, 2, 4, 8, 16$

32

15. $\frac{1}{3}, 1, \frac{5}{3}, \frac{7}{3}, 3$

$\frac{11}{3}$

Determine whether each conjecture is *true* or *false*. Give a counterexample for any false conjecture.

29. **Given:** $\angle 1$ and $\angle 2$ are complementary angles.
Conjecture: $\angle 1$ and $\angle 2$ form a right angle.

F

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Venn Diagrams

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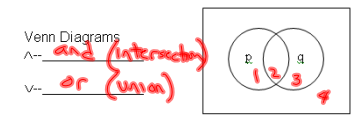
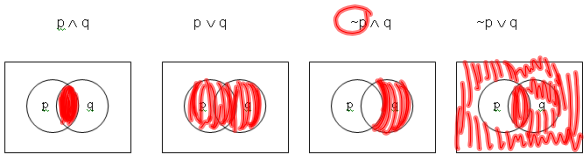
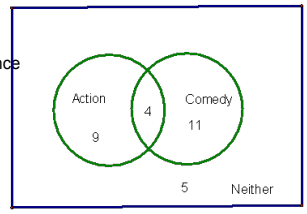




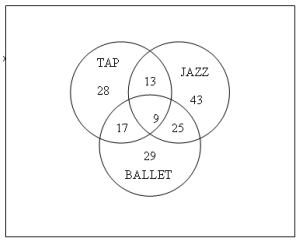
Use the Venn diagram to answer the following questions.

Jack surveyed the students in his science class to find out what movies they liked.



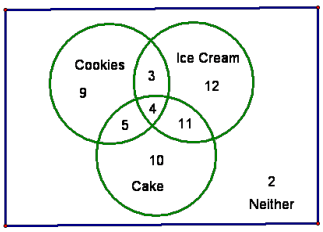
1. 29 How many students were surveyed?
2. 13 How many students liked Action?
3. 4 How many students liked Action and Comedy?
4. 14 How many students did not like comedy?

Use the following Venn diagram about dance classes to answer the questions.



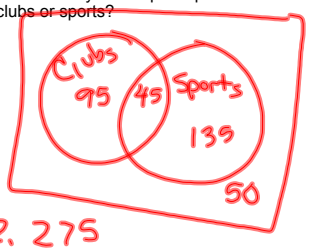
1. 9 How many students are in tap, jazz, and ballet?
2. 121 How many are in tap or ballet?
3. 25 How many are in jazz and ballet and not tap?
4. 34 How many are in jazz and ballet?

Use the following Venn diagram about dessert preferences to answer the questions.



1. 56 How many people were surveyed?
2. 21 How many people liked cookies?
3. 9 How many people liked cookies and cake?
4. 26 How many people did not liked ice cream?
5. 45 How many people liked cake or ice cream?
6. 4 How many people liked cookies and cake and ice cream?

In a sophomore class of 325 students, 140 participate in clubs, 180 participate in sports, and 45 participate in both.
1. Make a Venn diagram for the data.
2. How many students participate in either clubs or sports?
3. How many do not participate in either clubs or sports?



2. 275

3. 50